REMARKS

Claims 1-37 are all the claims presently pending in the application.

Independent claims 1, 13, 25, and 30 are amended merely to define more clearly and particularly the features of the present invention.

It is noted that the claim amendments are made only for more particularly pointing out the invention, and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability. Further, Applicant specifically states that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Applicants thank the Examiner for indicating that claims 26-29 are allowed.

Applicants further thank the Examiner for indicating that claims 2-9, 14-24, and 31-37 would be allowable if rewritten in independent form. Applicants reserve the right to rewrite these allowable claims in independent form at a later time.

Claims 1, 10-13, and 25 stand rejected on prior art grounds under 35 U.S.C. § 102(b) as being anticipated by Goode (U.S. Patent No. 3,251,034) and claims 1, 10, 11, 13, and 25 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Magnin (U.S. Patent No. 3,261,001). Claim 30 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Goode in view of Post (JP 11-341066 to Lawren L. Post).

These rejections are respectfully traversed in the following discussion.

I. THE CLAIMED INVENTION

The present invention relates to a method and system for synchronization in the presence of thermal asperity.

In the illustrative, non-limiting embodiment of the invention defined by independent claim1, a method of finding byte synchronization in a magnetic recording disk inserts a synchronization symbol into random data, wherein the synchronization symbol optimizes Hamming distance when slided over a concatenation of itself with random data.

In another exemplary embodiment of the invention defined by independent claim 13, a system for finding byte synchronization in a magnetic recording disk includes a synchronization symbol including predetermined Hamming distance properties when slided against different parts of itself, and a unit for appending the synchronization symbol to random data.

In another exemplary embodiment of the invention defined by independent claim 25, an encoder for finding byte synchronization in a magnetic recording disk includes a synchronization symbol including predetermined Hamming distance properties when slided over a concatenation of itself with random data, and a unit for appending the synchronization symbol to random data.

In another exemplary embodiment of the invention defined by independent claim 30, a signal-bearing medium tangibly embodying a program of machine-readable instructions executable by a digital processing apparatus to perform a method of finding synchronization in a magnetic recording disk, includes appending a synchronization symbol to random data, wherein the symbol includes predetermined Hamming distance properties when slided over a concatenation of itself with the random data.

Conventional disk drive systems utilize dual synchronization fields for each data header. By utilizing two sync fields, as apposed to one, catastrophic failures can be mitigated. However, the conventional systems are problematic because they take up valuable space in the stream which otherwise could be used for the data, thereby limiting the amount of data that can be written to the disk.

The present invention, on the other hand, provides an alternative to dual sync, by eliminating a second VFO field Sync 2 and replacing it with data (e.g., see specification at page 9, lines11-13).

II. THE PRIOR ART REJECTIONS

A. Claims 1, 10-13, and 25 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Goode. Applicants respectfully traverse this rejection, for the following reasons.

In the Office Action, the Examiner asserts that the claims do not define the feature of a magnetic recording environment (e.g., see Office Action at page 2, third full paragraph).

Therefore, Applicants amend independent claims 1, 13, and 25 herewith merely to define more clearly and particularly the features of the claimed invention.

For example, independent claim 1 recites, *inter alia*, "[a] method of finding byte synchronization in a magnetic recording disk by inserting a synchronization symbol into random data, wherein said synchronization symbol optimizes Hamming distance when slided over a concatenation of itself with random data" (emphasis added).

On the other hand, independent claim 13 recites, inter alia, "[a] system for finding byte synchronization in a magnetic recording disk, comprising: a synchronization symbol including

predetermined Hamming distance properties when slided against different parts of itself; and a unit for appending said synchronization symbol to random data" (emphasis added).

Further, independent claim 25 recites "[a]n encoder for finding byte synchronization in a magnetic recording disk, comprising: a synchronization symbol including predetermined Hamming distance properties when slided over a concatenation of itself with random data; and a unit for appending said synchronization symbol to random data" (emphasis added).

Applicants respectfully submit that Goode neither discloses nor suggests all of the features of independent claims 1, 13, and 25, for somewhat similar reasons as those set forth in the Amendment filed on March 12, 2004 (Applicants incorporate by reference the remarks submitted in the Amendment under 37 C.F.R. § 1.111 filed on March 12, 2004).

For example, Goode merely discloses a synchronization scheme for time-division multiplex pulse code modulation (PCM) systems. Goode provides synchronization methods for words within a frame and for frames themselves.

However, the method of Goode clearly is not applicable to magnetic recording.

On the other hand, in the magnetic recording environment of the present invention, synchronization for every word is not necessarily provided and words are not necessarily grouped in frames. The present application may achieve synchronization before a large sector of data by optimizing the Hamming distance.

Indeed, contrary to the claimed invention, Goode does not provide any means or apparatus for obtaining the reliable synchronization needed in magnetic recording.

Thus, Applicants respectfully submit that Goode does not anticipate, or render obvious, the claimed invention, but instead, is a synchronization scheme for a different application and

uses a very different technique that is insufficient for achieving synchronization in modern magnetic recording.

Accordingly, Applicants respectfully submit that Goode does not disclose or suggest all of the features of independent claims 1, 13, and 25, and therefore, Applicants request that the Examiner withdraw the rejection of claims 1, 10-13, and 25 and permit these claims to pass to allowance.

B. Claims 1, 10, 11, 13, and 25 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Magnin. Applicants respectfully traverse this rejection, for the following reasons.

For at least reasons similar to those set forth above, Applicants respectfully submit that Magnin also does not anticipate, or render obvious, the claimed invention.

Contrary to the claimed invention, Magnin relates to PCM systems, which are very different from modern magnetic recording technology, which involves partial response signaling.

Particularly, Magnin discloses some very primitive synchronizing patterns, such as '110' and '001'. However, Applicants respectfully submit that these patterns do not provide the necessary Hamming distance needed in magnetic recording allowing or tolerating multiple errors.

Thus, Applicants respectfully submit that it would not be possible to synchronize based on these two patterns because they do not produce the required Hamming distance. Thus, Magnin clearly is different and does not anticipate, or render obvious, the claimed invention.

For at least the foregoing reasons, Applicants respectfully submit that Magnin neither discloses nor suggests all of the features of independent claims 1, 13, and 25, and accordingly,

Applicants respectfully request that the Examiner withdraw the rejection of claims 1, 10, 11, 13, and 25 and permit these claims to pass to allowance.

C. Claim 30 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Goode in view of Post (JP 11-341066 to Lawren L. Post). Applicants respectfully traverse this rejection, for the following reasons.

For at least reasons similar to those set forth above, Applicants respectfully submit that neither Goode not Post, either alone or in combination, discloses or suggests all of the features of the claimed invention.

For example, independent claim 30 recites "[a] signal-bearing medium tangibly embodying a program of machine-readable instructions executable by a digital processing apparatus to perform a method of finding synchronization in a magnetic recording disk, comprising: appending a synchronization symbol to random data, wherein said symbol includes predetermined Hamming distance properties when slided over a concatenation of itself with said random data" (emphasis added).

For the reasons set forth above, Applicants respectfully submit that Goode does not provide any means or apparatus for obtaining the reliable synchronization needed in magnetic recording.

On the other hand, Applicants submit that Post also is not applicable to the claimed invention since Post is concerned with frames of video and audio.

Indeed, Post does not disclose, suggest, or for that matter mention, Hamming distance optimization or the like.

Thus, Applicants respectfully submit that any combination of Goode and Post clearly would not arrive at the claimed invention.

For at least the foregoing reasons, Applicants respectfully submit that neither Goode nor Post, either alone or in combination, discloses nor suggests all of the features of independent claim 30, and accordingly, Applicants respectfully request that the Examiner withdraw the rejection of claim 30 and permit this claim to pass to allowance.

III. FORMAL MATTERS AND CONCLUSION

The Office Action objects to Figure 7 because it has not been designated as "Prior Art".

The Examiner alleges that Figure 7 illustrates only a prior art 3-1/4 inch removable computer disc recording media, and therefore, since the steps of the program stored thereon are not illustrated in Figure 7, only the prior art recording media is illustrated.

Accordingly, to obviate the Examiner's objection, Applicants amend Figure 7 to designated the signal bearing medium 700 (e.g., storage medium) only as "Prior Art". Applicants state for the record that the steps of a program of a method according to the present invention stored on the signal bearing medium 700 (e.g., storage medium) are not "Prior Art" and such amendment of Figure 7 should not be treated as an admission that such is the case.

One (1) sheet of Corrected Formal Drawing for Figure 7 is submitted herewith, together with an annotated sheet showing change. Applicants request that the Examiner acknowledge receipt of, and acceptance of, the replacement drawing.

In view of the foregoing, Applicants submit that claims 1-37, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition

for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Assignee's Deposit Account No. 09-0441.

Respectfully Submitted,

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CERTIFICATE OF TRANSMISSION

I certify that I transmitted via facsimile to (703) 872-9306 the enclosed Amendment under 37 C.F.R. § 1.111 to Examiner R. Stephen Dildine, Jr. on July 23, 2004.

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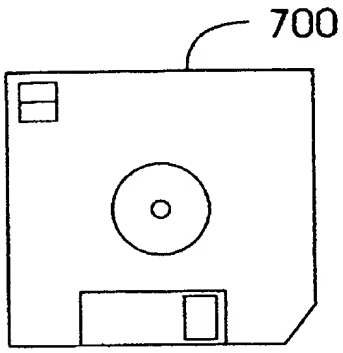

FIG. 7
(PRIOR ART)